

Docket No. F-7841

Ser. No. 10/665,193  
**RECEIVED**  
**CENTRAL FAX CENTER**

**REMARKS****AUG 25 2006**

Claims 11-12 remain pending in this application. Claims 1-20 are rejected.

Claims 11-12 are objected to. Claims 1-10 and 13-20 are cancelled herein. Claims 11 and 12 are amended herein to stand in independent form.

**CLAIM OBJECTIONS**

The Examiner has objected to claims 11 and 12 because of their dependence on a non-elected, hence withdrawn claim 10. Although rendered moot by the present amendments, it is noted that the objection is improper. Dependence from a withdraw claim in not proper grounds for rejection where the withdrawn claim is also dependent from a claim which is not withdrawn. Claim 10 depended from non-withdrawn claims 8 and 7. Allowance of claim 7 would have dictated allowance of all claims properly dependent therefrom.

**CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)**

Claims 7, 8, 9, 11 and 12 are rejected as obvious over the Hayakawa reference in view of the Pan reference under 35 U.S.C. §103(a). The applicant herein respectfully traverses this rejection. Claims 7, 8 and 9 are now cancelled. For a rejection under 35 U.S.C. §103(a) to be sustained, the differences between

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the features of the combined references and the present invention must be obvious to one skilled in the art.

The Examiner observes that FBG's properties of stretching and contracting are disclosed in Pan, paragraph 5, line 63 to paragraph 6, line 30, and concludes that it is readily conceivable for the skilled persons in the art to properly select a material of FBG so that FBG is structured to be able to cancel a change of properties of another temperature sensitive device, a wavelength conversion device. The Examiner further suggests that the assembly of the claim features is "like putting the last piece in a puzzle." It is believed that the Examiner is overlooking a significant aspect of the invention not considered in the statement of the rejection.

The Pan reference discloses an undesirable effect in that a wavelength of resonance using an FBG changes corresponding to temperatures (paragraph 6, lines 1 to 30). The Pan reference merely teaches overcoming the undesirable effect. The Pan reference discloses a package which is able to provide temperature-compensation over a wider range of temperature in comparison with the conventional structure wherein the temperature compensation provides a wavelength which is made constant even in case of temperature change. This is contrary to the requirements of the present claims.

The Pan reference does not disclose such technical concept that FBG's temperature properties are varied to match the temperature properties of a

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wavelength conversion device that vary with temperature. In other words, the Pan reference seeks to provide a constant output frequency by controlling the FBG. This is not what the invention does. The invention does not seek to maintain the FBG frequency constant.

It is respectfully submitted that the claim language does not set forth a constant frequency be achieved from the FBG which appears to the Examiner's reading of the claim. Instead, the claim requires:

a resonant wavelength adjusting means for adjusting the resonance wavelength of the optical resonator output light in accordance with temperature so as to maintain the harmonic of the light from the wavelength conversion device substantially constant regardless of a change in the temperature of the wavelength conversion device by *substantially matching a temperature induced shift of said wavelength range for input light of said wavelength conversion device.*

(Emphasis Added) This plainly sets forth matching a temperature *shift of the frequency of the wavelength conversion device* with the adjusting means. The Pan reference instead seeks to maintain an output frequency of the FBG constant. Accordingly, there is no suggestion that an FBG based resonance structure may be adjusted in frequency to match a *shifting* frequency characteristic of the wavelength conversion device using a temperature sensitive element acting on the FBG..

Contrary to the analogy presented above to the last piece in a puzzle, the present invention is again to recognizing the fitting of two puzzle pieces from

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different puzzles presenting different pictures absent framing provided by other pieces. Essentially, the present invention provides for applying a device to vary the output of one component to match the variation in another component. In contrast, the Pan disclosure provides a teaching significantly limited in two respects. The first respect is that it is focused on providing a constant frequency output from the FBG. The second respect is it does not teach controlling the temperature characteristic of a first device to shift in accordance with a temperature characteristic of a second device. Absent such teaching there is no suggestion to arrive at the present invention.

The presently claimed invention provides that since a wavelength at which conversion efficiency of the wavelength conversion device peaks depends on temperatures, an FBG is adapted to be stretched and contracted to the shift its wavelength to change in a manner adjusting for the shift in the wavelength of the wavelength conversion device, whereby keeping the conversion efficiency constant, i.e., the harmonic output constant. Such a functional operation is not at all disclosed in any cited documents.

The combination of the references provided by the Examiner at leads to a temperature compensated FBG supplying a constant frequency over temperature to a wavelength conversion device. Even an extrapolation of the teaching of the Pan reference to the Hayakawa reference fails to lead to the present invention.

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Since the Pan reference teaches applying a temperature sensitive member A to and a temperature sensitive device B to maintain device B's temperature sensitive parameter *constant*, one might transfer this teaching to the wavelength conversion device by applying a second temperature sensitive member to the wavelength conversion device to set its resonant frequency constant and matching the constant frequency of the FBG. Applicant wishes to make clear that this is not what is claimed. Applicant instead intentionally shifts an output frequency of the FBG to compensate for a shift in resonance frequency of the wavelength conversion device. The references are silent concerning the intentional shifting of a temperature sensitive parameter of a first device using a temperature sensitive member on that first device to accommodate the shift in a parameter of a second device.

In view of the above discussion and reassertion of the prior arguments made in the Amendment filed February 17, 2006, applicant respectfully requests that the Examiner again review the applied reference in light of the above remarks. Reconsideration of the rejections of claims 11 and 12 and their allowance are respectfully requested.

**REQUEST FOR EXTENSION OF TIME**

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Applicant respectfully requests a one month extension of time for responding to the Office Action. Please charge the fee of \$120.00 for the extension of time to Deposit Account No. 10-1250.

If there is any discrepancy between the fee(s) due and the fee payment authorized in the Credit Card Payment Form PTO-2038 or the Form PTO-2038 is missing or fee payment via the Form PTO-2038 cannot be processed, the USPTO is hereby authorized to charge any fee(s) or fee(s) deficiency or credit any excess payment to Deposit Account No. 10-1250.

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In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,  
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